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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,586	08/16/2006	Masatoshi Nakanishi	10921.423USWO	2726

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EXAMINER	
LEGESSE, HENOK D	
ART UNIT	PAPER NUMBER
2861	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,586	NAKANISHI ET AL.	
	Examiner	Art Unit	
	Henok Legesse	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 08/16/2006.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: foreign document.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiyouji Noriyoshi (JP pub# 2001-162849).

Regarding claim 1, Shiyouji teaches a thermal printhead (fig.1; top view of thermal head) comprising:

a plurality of heating resistance sections (heating elements, 2 in fig.1) arranged on a substrate (1) side by side in a primary scanning direction (see fig.1);

a common wiring portion (common electrode, 4 in fig.1) at least part of which extends in the primary scanning direction while being spaced from the heating resistance sections (2) in a secondary scanning direction (see fig.1); and

a plurality of first lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to 4) and a plurality of second lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to driver IC 6) for connecting the heating resistance sections (2) to the common wiring portion (4) and to a drive IC (6) for controlling energization (paragraph 0002);

wherein the common wiring portion (4) is segmented into a plurality of blocks arranged side by side in the primary scanning direction (from fig.1 it is clear that each block which is defined between voltage feed electrodes 8, repeats side by side), and voltage is applied to opposite ends of each of the blocks in the primary scanning direction (voltage is applied to voltage feed electrodes 8); and

wherein the plurality of heating resistance sections (2) are segmented into a plurality of other blocks (see fig.1; heating elements 2 corresponding to on driver IC defines a block of 2) corresponding to the blocks of the common wiring portion (4), and, in each of said other blocks, resistance of the heating resistance sections (2) reduces as proceeding from opposite ends toward center of the block in the primary scanning direction (in this case as proceeding from opposite ends of external connection terminals of common electrode 4 ,i.e. from terminals 8, to wards the center of the block, the resistance value of the heating resistors 2 decreases. See the abstract and paragraph 0012).

Regarding claim 2, Shiyouji further teaches the plurality of first lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to 4) are generally equal to each other in resistance (paragraph 0012, lines 1-2, also see fig.1), and the plurality of second lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to driver IC 6) are generally equal to each other in resistance (paragraph 0012, lines 1-2, also see fig.1).

Regarding claim 4, Shiyouji further teaches a plurality of drive ICs (driver IC 6 in fig.1) are provided, and each of the drive ICs (6) corresponds to a respective one of said other blocks of the heating resistance sections (2).

Regarding claim 5, Shiyouji further teaches a plurality of third lead wiring portions (see fig.1; U character-like wirings above each pairs of heating elements 2) each connecting adjacent pair of the heating resistance sections (2) arranged in the primary scanning direction;

wherein the drive IC (6) is arranged closer to the common wiring portion (4) than to the heating resistance sections (2) in the secondary scanning direction; and

wherein the first lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to 4) and the second lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to driver IC 6) are alternately arranged in the primary scanning direction to be connected to respective pairs of the heating resistance sections (2) and extend from the heating resistance sections (2) toward the common wiring portion (4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiyouji in view of Yasuda (US 6,612,672).

Shiyouji substantially teaches substantially the claimed invention, see paragraph 0013, but failed to expressly teach the first lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to 4) are unequal in length, and the second lead wiring portions (individual lead electrodes, 3 in fig.1 which are connected to driver IC 6) are unequal in length, wherein a longer one of the lead wiring portions has a larger width at least partially.

However, from the same endeavor Yasuda teaches wirings that connect heating elements to a power sources arranged such that the wirings are unequal in length. The shortest wire (the wire nearest to the power supply side in fig.6) is formed smallest in width and the longest wire (the wire furthest from the power supply side in fig.6) is formed largest in width in order to ensure the resistance of the wires running to different heating elements are equal (fig.6; col.8, lines 18-33).

Therefore it would have been obvious to one having ordinary Skill in the art at the time the invention was made to form the first and second lead wiring portions of Shiyouji made unequal in length, wherein the longer one of the lead wiring portions has a larger width based on the teachings of Yasuda. The motivation is to ensure the resistance of the wires used for connecting the heating elements uniform, thereby realizing a uniform supply of current to each of heating elements which results in better print image quality (col.8, lines 18-33 of Yasuda).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henok Legesse whose telephone number is (571) 270-1615. The examiner can normally be reached on Mon - FRI, 7:30-5:00, ALT.FRI EST.TIME.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HL
08/13/2007

MATTHEW LUU
SUPERVISORY PATENT EXAMINER